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Remarks

Status of the Application

Pursuant to election/restriction, claims 11-29 and 52-61 are pending. For the quinoxaline derivative, Species III, Formulae II(b)-II(g) and II(j)-II(l) (as originally numbered, now renumbered pursuant to required drawing corrections – see below) has been elected. For R¹, Species V: H, F, Cl, Br has been elected. For R², Species II, pyridyl and substituted pyridyl groups, has been elected. For R³, a single bond has been elected. For Q, Species V, single bond or multivalent group, has been elected. Applicants expect that if any species of the elected species are found allowable, that non-elected species will be examined on the merits in their turn.

Claims 1-10 and 30-51 are withdrawn pursuant to restriction.

Drawing Corrections. Sheets 12/18 through 15/18 are being submitted as replacement sheets to correct the error cited by the Examiner wherein Formulae II(b) and II(d) showed the same structure. Formula II(b) has been deleted, with all of the following formulae renumbered so that II(c) is now II(b) and II(d) in the original drawings is now II(c), and so forth.

Specification Amendments. The specification has been amended to bring the references to Formulae II(a) – II(k), as renumbered in the replacement sheets into consistency of usage with the replacement sheets. In addition, the paragraph at lines 3-22 on page 7 is being amended to correct an obvious typographical error where the multivalent Q groups in Figure 5 were erroneously designated as Formula V rather than Formula IV in two instances in the body of the paragraph.

Claim Amendments. Claim 11 is the sole independent composition claim. All of the remaining composition claims depend directly or indirectly from claim 11. This claim has been amended to add the schematic depiction of Formula II, Figure 2, to the body of the claim and also to specify that the multivalent Q group is selected from the group consisting of arylamines, silanes and siloxanes. Claim 15 is amended to delete from the group comprising Q the following groups: alkylenes, heteroalkylenes, alkenylenes, and heteroalkenylenes. Claim 16 is amended to specify Q multivalent groups as those shown in Formulae IV(d)-IV(h) and to include schematic structures for those formulae. Claims 17, 28 and 29 are canceled. Claims 52 and 59 (drawn to devices) are amended to include the formulae recited therein in the body of each claim. Claim 61, also drawn to devices, is amended to place the claim in proper multiple dependent form.

Drawings

Replacement sheets 12/18 through 15/18 overcome the objection. Applicants respectfully request that the drawings contained in the replacement sheets be accepted and this objection be withdrawn.

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35 U.S.C. § 112 Rejections

Applicants respectfully submit that the claim amendments overcome the non-art rejections in their entirety, and respectfully request that these rejections be withdrawn.

35 U.S.C. § 102/103 Rejections

The claims stand rejected in the alternative over Nakamura (JP 07-026255 STN Patent Abstract). Applicants respectfully submit that the claim amendments and cancellations with respect to the composition claims overcome or render moot these rejections with respect to those claims, and that the device claims are patentable over Nakamura in light of the remarks presented below.

Nakamura has a 6,6'-biquinoxaline with tetrapyridinyl side chains, and in Formula I shows Z as a linking group. The linking groups comprising Z do not include those of the amended claim 11 and its dependent claims, where Q is given various definitions for the multivalent group. Applicants respectfully submit that the groups presently in the amended claims fall within the elected species "multivalent group". Applicants note that the Office Action indicates that claims 14-21 were withdrawn, apparently in view of the elections made to particular species. However, some of that subject matter appears clearly to fall within the elected multivalent group, and accordingly, Applicants submit that the amendments submitted herein are proper. Clarification, if needed, is respectfully requested. Since the independent claim overcomes novelty over Nakamura, its dependent claims should also be deemed novel and patentable over the reference.

Nakamura's device is directed to "a mixed cathode containing an electron-injecting metal and a quinoxaline derivative" (Abstract). Applicants' device claims do not contain this limitation, and Applicants respectfully submit that it would not have been obvious, given Nakamura's disclosure, to create a discrete layer using Applicants' compounds without an electron-injecting metal. The device claims are drawn to a device containing at least two layers, a photoactive layer and a second layer, comprising a quinoxaline derivative of the invention. Nakamura discloses and teaches a mixed cathode, not a photoactive or other layer, such as a buffer. "Charge transport compositions" for example are defined as discrete and separate from the electrode to which they are associated (specification at page 3, lines 4-10). Accordingly, Applicants submit that the layers comprising compositions are non-obvious over Nakamura's mixed metal-quinoxaline cathode.

Conclusion

Applicants respectfully submit that the pending claims are in condition for allowance and that additional, currently non-elected species should be examined on the merits.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read "J. Lamming", with a long horizontal stroke extending to the left.

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